CHAPTER 1

INTRODUCTION

1.1 Introduction

Building construction is a complex process, which requires close cooperation and coordination among the stakeholders. The process also consists of different stages, which ultimately make it more complicated and difficult to manage. From the view of an author Oberlander (1993), the different stages of construction projects are, inception/conceptual stage, design development (sketch and detail design), procurement, construction, testing and commissioning and operation. All the stages are important and it caries significant impact to the project. However, according to Smith (1995) design stage gives the greatest influence on the final capital cost of a project. This shows how important the design stage is.

Studies by many researches have pointed out that design plays an important role in improving the development of construction industry. A good design will enhance value generation, reduce dispute and improve the workflow. As the designing work being undertaken there are tendencies for changes in design to happen. These changes can take place right from the drawing stage up till the construction phase. The later the changes are made, the more of it will affect the project.

In the actual design environment, changes inevitably and continuously affect the properties of many building components at various stages in a construction

project. Such changes may occur due to the needs to satisfy the new or modified requirements specified by the owner, to reduce project cost, or to rectify existing design mistake (Wang and Soh, 2000). To make things worse most of the changes were made during construction stage. These will generate change orders, contractual disputes, cost overrun, time delay, compromising on quality and frustration. In addition to that parties which are involved in the process of making the changes into reality will need to submit fresh claims on the extra work done.

1.2 Problem Statement

Change order is known as one of the major setbacks for construction projects. They are many factors that contribute to the changes and the effects of such are also varied depending on its causes. As for designers, changes mean extra work and these extra works are liable for them to claim. However, there are difficulties in doing so, generally because of problems such as complexity in quantifying the value and lack of guidelines on the matter.

1.3 Objective of the Study

The study is aimed to provide an understanding of what causes change order and their relative effects to the engineering consulting firms. In addition it will also look into the nature of claims made by the designers and suggest some improvement on the current practice.
The main objectives of the study are:

1. To identify the main causes of change order in construction projects from the engineering consultants point of view;
2. To identify the resulting effects of change order to the practitioners of engineering consulting firms; and

3. To provide suggestion on how to improve the claim procedure practiced by engineering consultants on extra works caused by change order.

1.4 Scope and Limitation of the Study

The study was confined itself within the following scopes:

1. It is only focusing on the causes and effects of change order from engineering consultant perspective.
2. The respondents involved were only the engineering consultants from Klang Valley area.
3. The suggestion made is only focusing on method the to improve claim procedures for the engineering consultant practitioners.

There are guidelines on the fees or claims that need to be paid to the consultants in performing their duties as designers. Example of such is the schedule of fees which was produced by the Board of Engineers Malaysia. However, this guideline is lacking in the area of claims that related to rework or extra work caused by change order. Thus, it is the aim of this study to look at the normal practice that used by Malaysian consulting engineering firms in the mentioned task.

1.5 Brief Research Methodology

This research started off with problem identification which done through unstructured interview and brief literature reading. Upon obtaining the identified problem thorough literature review were conducted to provide in depth understanding on the issues of change order, focusing on the causes and effects to engineering consultants practitioners. The literature includes books, dissertations, magazines, journals, newspapers readings and seminar notes. Apart from the literature review, the study was also conducted using questionnaire surveys that were

sent out to respective engineering consultant organisations. The objective of the survey is to obtain more extensive coverage of the Malaysian scenario on the issue of change order and claims made by engineering consultants on extra works caused by change order. Upon obtaining the data desired, checking and sorting of data were done and followed by data analysis which was the main component of the research. Finally from the data analysis acquired conclusion and recommendation were made. Figure 1.1 shows the flowchart of the research methodology.

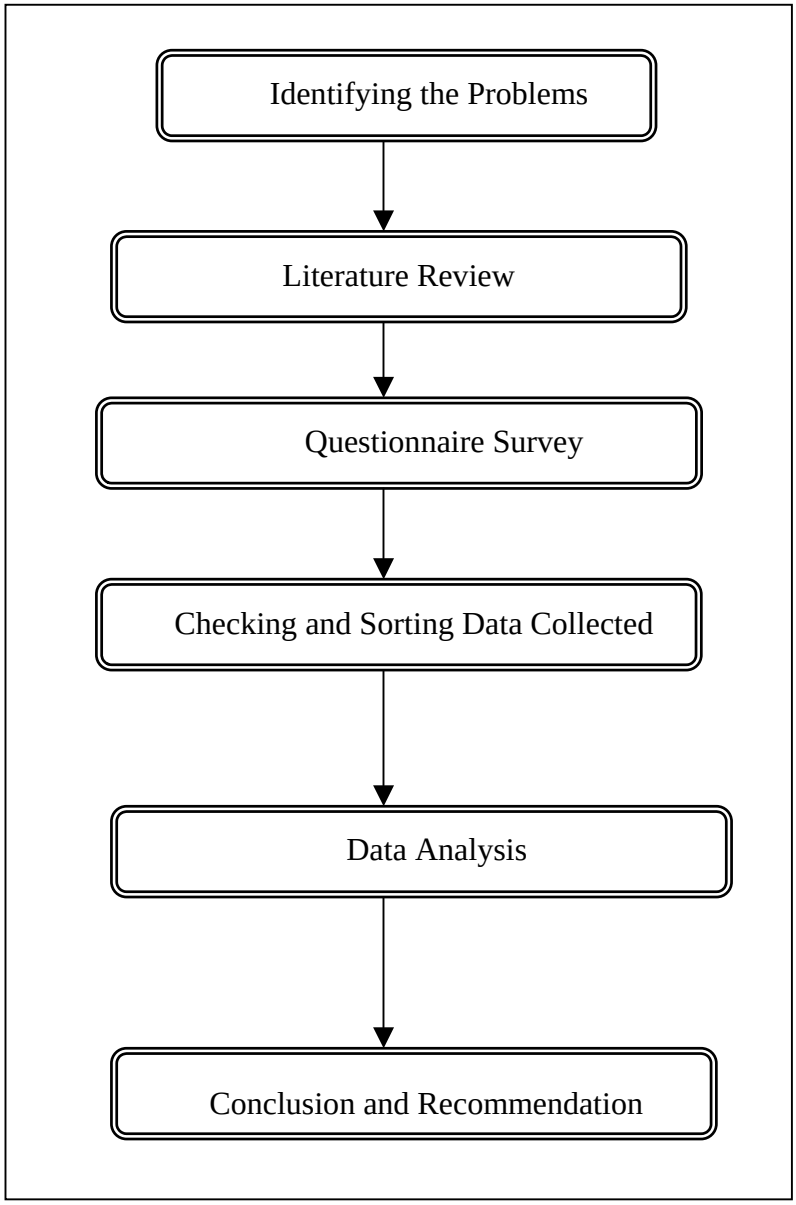

Figure 1.1 Flowchart of brief research methodology

1.6 Structure of Dissertation

The dissertation is divided into 7 Chapters. The first chapter discusses on the objectives, scope and limitation of the study, and brief research methodology adopted to fulfill the objectives of the study.

Chapter 2 discusses on the issues of change order, its causes and the effects. Understanding on the causes of change order were established and as a result the effects of it were recognised as well. Furthermore the methods of claims made by the consulting engineers on the extra works caused by change order were being looked into in Chapter 3.

While in Chapter 4 it discussed in detail the research methodology adopted for the study. The approach to the questionnaire design is explained and the flowchart of research methodology was shown.

The findings from the survey questionnaire are analysed in Chapter 5. The respondents for the questionnaires were only those from the Civil and Structural Engineering Consulting firm and from the Mechanical and Electrical Engineering Consultants organisations. In Chapter 6, the research findings are thoroughly discussed.

Chapter 7 concludes the study and makes recommendations to the construction industry for future research on the issues of change order and claims by the engineering consultants.